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PUBLIC SCHOOL HEALTH BULLETIN

NUMBER IV

MEDICAL INSPECTION

OF

SCHOOLS

AND

SCHOOL CHILDREN

ISSUED FROM OFFICE
SUPERINTENDENT OF PUBLIC INSTRUCTION OF NORTH CAROLINA
RALEIGH, 1912

EDWARDS & BROUGHTON PRINTING CO., RALEIGH, N. C.

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Medical Inspection of Schools

and

School Children

Prepared by

JOHN A. FERRELL, M.D.

Assistant Secretary to State Board of Health for Hookworm Disease

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SUPERINTENDENT PUBLIC INSTRUCTION OF NORTH CAROLINA

RALEIGH, 1912

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PREFACE

The development of the body proportionately with the development of the mind, that a sound mind may have a sound body with which and through which to work effectively, has been recognized by all thoughtful educators in all enlightened lands from time immemorial as an essential part of education.

The first duty of every teacher and every school official is the protection of the health and lives of the children committed to his care. Careful attention should, therefore, be given to providing healthful surroundings in the schoolroom and on the school grounds, to the prevention of disease by the removal, so far as possible, of the causes of disease from schoolroom and school grounds, to the detection and correction of physical defects and diseases by systematic and scientific inspection of the children. This work will never be properly emphasized and effectively done in our schools without a definite system of medical inspection of children, schoolrooms and grounds under the direction of a practical, scientifically trained health officer, devoting his entire time and attention to it.

It affords me pleasure, therefore, to call careful attention to this excellent bulletin on Medical Inspection, prepared by Dr. John A. Ferrell, with the sanction and under the direction of the North Carolina State Board of Health; and to bespeak the hearty coöperation of county superintendents, teachers, and all other citizens interested in the education of the children of North Carolina with that Board in its commendable efforts to secure competent, trained health officers in every county, who shall give a reasonable part of their time to medical inspection of the public schools and to the direction, in coöperation with the teachers and school officials of the county, of the health work in the schools.

Very respectfully,

J. Y. Joyner,

State Superintendent of Public Instruction.

The Relation of Physical to Mental Development

W. S. Rankin,

SECRETARY TO STATE BOARD OF HEALTH.

In the natural order of things, we begin with the lower and fundamental and from them pass to the higher. Creation, itself, according to both its interpreters, Moses and Darwin, followed this order: there was first the inanimate or inorganic world, then the vegetable world, then the lower animal world with its culmination in man, the embodiment of the Creator Himself.

This Omniscient method of development is emphasized by repetition in the embryonic or prenatal development of that epitome of nature, the child: the body framework, the heart, the blood vessels, the alimentary organs, then the nervous system, and of this last its higher part, the thinking brain or mind, come forth in due order, as the perfume of a beautiful flower finds its way from the dead soil to the ethereal world.

During the last half century mental development, as indicated by declining illiteracy, has been marked; during the same period of time there has accumulated considerable evidence which indicates that decreasing illiteracy and racial development, the latter the true object of education, have not gone on hand in hand; in fact, the evidence indicates a decrease in illiteracy coincident with an increase in racial deterioration. But, the educational forces of today are awake, and their present praiseworthy interest and activity in the physical side of education, as expressed through the extensive adoption of medical inspection of schools and the placing of greater stress on the study of hygiene, indicates a future in which the race will develop in vigor of *both* mind and body. In the past, the narrow vision of the pedagogue has been restricted to the mind, a part of the child; in the future the teacher who is broad-visioned will behold the child. In this broader vision those biologic laws interpreted for the first time during the last half century will have precedence over the conjugations and declensions of dead languages. The body and mind will be recognized as forming an indissoluble union, and what God has joined they will not seek to separate. When our educational systems recognize this true relation of the body and mind in the development of the future citizen, their activities will harmonize with the eternal order of things.

INTRODUCTION

The aim of this pamphlet is to stimulate public interest in having in each county a superintendent of health who in addition to performing the customary duties shall conduct a thorough medical inspection of the public schools and school children. It intends to show that in failing to provide such an inspection we are not conserving the life of our future citizens, our greatest wealth, but that in this particular we are falling behind many states and countries. The work has been done effectively elsewhere. It can be done here.

The rearing of healthy, educated citizens to guide the ship of state demands that in their childhood they be shielded from disease and freed from those handicapping defects which blight health and ambition. This can not be done by the part-time health officers called in to fight disease after it has become epidemic, or to care for those who—often through medical neglect—have become criminals or paupers. It can be done only by a competent whole-time health officer who with the intelligent coöperation of the ever-present teacher will identify the first appearance of disease or defect and immediately apply the proper remedy.

It is regretted that medical inspection is carried on to such a limited degree in our State that data on the subject must be obtained almost entirely elsewhere. To Gulick and Ayers we acknowledge our appreciation for a most complete and valuable treatise on the subject. Their "Medical Inspection of Schools, one of the by-products of the 'Backward Children Investigation,' supported by the Russell Sage Foundation," outlines what is being done by states and cities in this work and the methods followed. We have quoted freely from it. The "Medical Examination of Schools and Scholars," by Kelynack, is a most exhaustive work on the subject, especially covering the systems used in England and other European countries.

To Dr. J. Y. Joyner, State Superintendent of Public Instruction, our thanks are extended for his hearty coöperation at all times in supporting every movement toward the fitting of our children physically and mentally for the highest and most useful type of citizenship. His preface and the foreword of Dr. W. S. Rankin, Secretary to the State Board of Health, stress the imperative need of a systematic and thorough medical inspection of all school children.

The Medical Inspector is a Representative of the Board of Health and of the Board of Education.

Jno. A. Ferrell, S.B., M.D.,
Assistant Secretary to State Board of Health for Hookworm Disease.

The medical inspection of schools and school children is a service performed by a physician representing the Board of Health and the Board of Education conjointly. His duties embrace an inspection of school premises relative to the sanitary condition of the school property and the vicinity immediately surrounding it; the school children for the identification of all those requiring medical care; the exclusion of those suffering from communicable diseases; the detection of ailments, defects or diseases other than communicable diseases, the examination of the drinking water, the inspection of privies, and other school facilities necessary to the protection of the health and vitality of those attending school.

It is the work of the health department in that it aids to prevent or eradicate disease, to protect health, and to teach our children *how to live* to be useful citizens. It is the work of the Educational Department in that it saves and preserves the child for the school, a healthy, educatable child, one whose heart and mind is receptive to training, one whose life will bless the State with the highest type of citizenship. Both departments in endeavoring to meet what may have seemed emergencies have been giving their efforts primarily to other lines of work, and only secondary consideration has been given to the line of activity fundamentally essential to placing the work of either department on a firm foundation.

The conducting of medical inspection is so essential to both departments and so inseparable, at this time, from either, that the inspector should be a representative of both acting conjointly. With any other arrangement there might arise a conflict of authority. If there is to be any separation of the respective departments in the work the authority for its conduction should be logically vested in the educational department, with power when conditions warrant it to delegate the authority to the health department.

THE MEDICAL INSPECTOR—HOW SELECTED.

As the medical inspection among our rural schools represents something of a pioneer work its success or failure will be governed very largely by the man selected as inspector. He should be a physician well equipped with collegiate and professional training. He should possess discretion, tact, patience, enthusiasm for the work, and the power to inspire enthusiasm in others. Previous experience in school and health work is a very desirable requisite. Possessed of these qualifications the man needed will always command an adequate income. It need not be expected, therefore, that he can be had without his being compensated on a basis commensurate with what he would receive in private practice. To let out work of such vital importance to the lowest bidder, to one perhaps who needs the salary because in

private practice he is so seldom sought, would be fatal to the work, and should be regarded as criminal. The man chosen should be the fittest physician obtainable, without regard to County or State boundaries.

THE MEDICAL INSPECTOR—HOW OBTAINABLE.

The county commissioners now pay a county superintendent of health to care, as a rule, for those who—often perhaps through medical neglect—have become paupers or criminals, and to fight disease usually after it has become epidemic. It is the exception to find applied the principle of "a stitch in time saves nine." The toll paid directly and indirectly as a result of such a system is appalling. The jails are filled; the county homes are crowded; the dependents are numerous; schools are poorly attended; many children are backward and require two years to complete what should be accomplished in one; frequently on account of epidemics schools are actually closed for weeks and months, quarantines are established, business suffers, and there is general stagnation.

The county can not afford to longer tolerate this poor business policy. It must invest in the best talent obtainable, regardless of price, to protect it from such conditions. The "stitch in time" principle must be applied.

To take the entire amount needed from either the general county fund or from the school fund in a small county might cause some slight inconvenience, but if both funds will support the inspector who is mutually the choice of the Board of Health and the Board of Education, the expense will not be heavy on the Commissioners nor on the Board of Education. As a matter of fact, it should make little difference which tax money is used to provide for medical inspection, as it affords protection to all the people and may well be regarded as either regular health or regular school work.

The counties of Guilford and Robeson have employed capable superintendents of health for their whole time. A number of other counties have begun some medical inspection work and are increasing the compensation of their superintendents accordingly.

FIG. 1. State and county dispensaries for the free examination and treatment for hookworm disease have been phenomenal successes. The photograph above shows one of the dispensaries in Robeson county. Two hundred people were treated on the day the picture was made. Thirty-five counties in the State have provided small appropriations for the local expenses of this work. Up to date 63,000 people have been treated for the disease in the State. Ten Southern States are engaged in similar campaigns.

HISTORY OF MEDICAL INSPECTION.

Medical inspection of schools has been marked by a steady growth in the United States for the past twenty years. In certain foreign countries it has been in vogue for a much longer period, and is now conducted on a permanent and definite basis. Both here and abroad it was first adopted by the city schools. It was soon found indispensable to them and has been gradually adopted by the schools of towns and villages. Within the past three or four years it seems to have dawned on our people that if medical inspection is indispensable in city schools it must also be indispensable in rural schools. Within this time twenty States have enacted laws providing for medical inspection. The following table by Leonard P. Ayres, Ph. D., gives the dates and also the character of the laws passed by the respective States.

PRINCIPAL FEATURES OF STATE LAWS AND REGULATIONS PROVIDING FOR MEDICAL INSPECTION—1911.

State.	Date Adopted.	Permissive or Mandatory.	Administered by School or Health Authorities.	Inspection by Doctor for Contagious Diseases.s	Physical Examination by Doctors.	Inspection of Teacher, Janitors and Buildings by Doctors.	Sight and Hearing Tests by Teachers.	Normal Pupils Trained in Tests of Sight and Hearing.	Provision for Employement of Nurses.	Penalty for Violation of Law.	Parents Compelled to Remedy Condition Discovered.
California	1909	P	H								
Colorado	1909	M	S				X				
Connecticut	1907	P	S	X	X	X			X		
District of Columbia	1907	M	S	X		X					
Indiana	1911	P	S or H	X	X	X	X			X	
Louisiana	1911	M	H								
Maine	1909	P	S	X	X	X	X				
Massachusets	1906	M	S	X	X	X	X	X			
Minnesota	1910	M	S	X	X	X	X	X			
New Jersey	1909	M	S	X	X						X
New York	1910	P	S								
North Dakota	1911	P	S		X						
Ohio	1910	P	S	X		X			X		
Pennsylvania	1911	M	S	X	X	X			X		
Rhode Island	1911	M	S	X	X	X	X				
Utah	1911	M	S		X		X				
Vermont	1910	P	S	X							
Virginia	1910	P	S								
Washington	1909	P	S	X		X					
West Virginia	1911	M	S	X	X	X			X		

THE NEED OF MEDICAL INSPECTION.

The results of medical inspection are tabulated in so few instances that it can not be said definitely what percentage of children are defective. Those available, however, do not differ widely from those of New York City and Minneapolis, which are as follows:

PHYSICAL EXAMINATIONS IN NEW YORK AND MINNEAPOLIS.

	New York City.		Minneapolis.	
	1906	Per Cent	1908	Per Cent
Number Examined	78,401	100	710	100
Bad Nutrition	4,921	6.3	166	23.3
Anterior Cervical Glands	29,177	37.2	377	53
Posterior Cervical Glands	8,664	11	----	----
Chorea	1,380	1.7	2	.2
Cardiac Disease	1,096	1.4	15	2.1
Pulmonory Disease	757	.9	30	4.2
Skin Disease	1,558	1.9	12	1.6
Deformity of Spine	424	.5	----	----
Deformity of Chest	261	.3	----	----
Deformity of Extremities	550	.7	----	----
Defective Vision	17,928	22.8	170	23.9
Defective Hearing	869	1.1	55	7.7
Defective Nasal Breathing	11,314	14.4	----	----
Defective Teeth	39,597	55	309	43.5
Defective Palate	831	1	2	.2
Hypertrophied Tonsils	18,306	23.3	221	31.1
Postnasal Growth	9,438	12	91	12.8
Defective Mentality	1,857	2.3	----	----
Where Treatment was Necessary	56,259	71.7	462	65.1

Dr. G. F. Ross, Superintendent of Health of Guilford County, N. C., has had the coöperation of the county teachers in his medical inspection of rural schools, a work covering only a few months. He requested the teachers to supply a list of those children who seemed noticeably defective (10% of their total enrollment). Sixty teachers "sent in lists showing that over 1,200 children do need medical attention." Personally he has examined 400 of them, finding "97% of those examined have noses and throats filled with adenoids and tonsils. These children were undersized and underweight."

"Eighty per cent have varying degrees of deafness, probably from the nose and throat conditions.

"A large percentage have various eye troubles, doubtless for the same reason.

"Sixteen per cent of those examined are victims of hookworm disease."

Continuing, Dr. Ross writes: "Several cases of pulmonary tuberculosis and hip-joint disease were found, and of course the various parasites."

"From what I have found and from the improvement in health and school work noted after operation, we should, here in Guilford County, turn our attention to adenoids and tonsils. Children after treatment have gained six to twenty pounds up to date and show remarkable quickening of their mental faculties." "Another matter which we should stress is that of cleanly teeth." He found little care given to the teeth.

Dr. Ross is getting his work well in hand and is giving evidence that an investment in medical inspection pays. Dr. B. W. Page has begun similar work in Robeson County. Soon we shall have all the data desired from our own schools collected by reliable methods.

HOOKWORM DISEASE.

The distribution and degree of prevalence of hookworm disease is as definitely determined in North Carolina perhaps as in any State or country in the world. Even if the county health officer should devote his entire time to its eradication alone, the expense would doubtless represent one of the best investments ever made in protecting health and life. In our State campaign we have microscopically examined more than seventy-one thousands of people for the disease, and have already treated 63,142 cases. We know that the disease prevails in ninety-nine of the one hundred counties of the State with greater or less frequency.

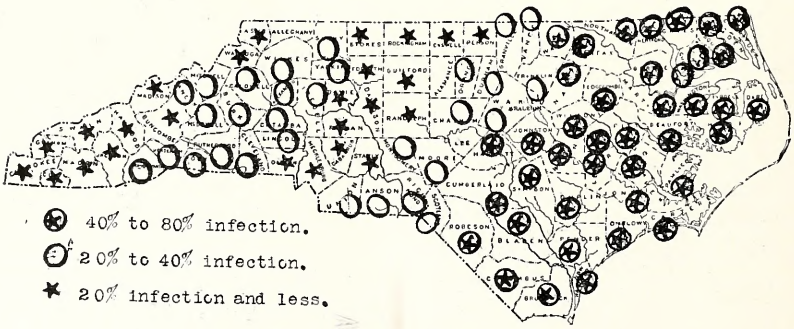

FIG. 2. Map showing the prevalence and distribution of hookworm disease in North Carolina.

In determining its frequency by counties we microscopically examine not less than two hundred rural school children—ages six and eighteen, inclusive—taken at random in each county. The surveys are complete in twenty-nine counties and partially complete in other counties to a degree sufficient to justify the map (Fig. 2) on the frequency of hookworm disease in North Carolina. The following is a list of those counties having a complete infection survey (together) and the percentages of infection found:

County.	No. Examinations	Per Cent Infection.
Burke	426	59
Carteret	1333	64
Caldwell	337	63
Columbus	263	88
Cumberland	1537	50
Davie	225	17
Duplin	257	73
Hertford	389	31
Johnston	394	35
Martin	457	47
McDowell	287	71
Mitchell	210	52
Montgomery	248	20
Pender	612	69
Pitt	412	67
Randolph	254	17
Robeson	1411	51
Rowan	246	21
Sampson	859	80
Wake	200	25
Warren	399	40
Wayne	1943	54
Yancey	557	31
Craven	1509	54
Chowan	544	40
Gates	889	35
Bertie	1539	48
New Hanover	268	51
Beaufort	423	66

Can we neglect to have the simple examination made and the treatment administered for this disease, knowing that by it more than one-fourth of all our girls and boys are being stunted in their bodies, dulled in their minds, robbed of their vitality, rendered backward in their work, and started on a road which will lead them to death, invalidism, or perhaps to prisons?

The superintendent of health could do much to eradicate this disease by conducting from time to time free clinics such as is being done by the Hookworm Commission. These would be for the benefit of those who for the lack of means or other reasons have failed to seek cures from their family physician.

MEDICAL INSPECTION JUSTIFIED.

The public schools are a public trust. "Where a parent delivers his child to their care, he has a right to insist that the child under the supervision of the school authorities shall be safe from harm, and will at least be handed back in as good condition as he was before. If the parent does not claim this right, the child has a right to claim it. Where a State for its own protection compels a child to go to school, it pledges itself not to injure itself by injuring the child." If a child who is diseased, defective or otherwise handicapped is forced to compete with a normal healthy child, he is over burdened and is subject to a more complete wrecking of his mental or physical well-being. If his ambition is stifled and he refuses to compete he is likely to grow up to swell the ranks of the unemployed and the unemployable.

"It will be found ultimately that it is a great deal cheaper to spend pence on children than pounds on paupers." Unless the bodies of children are attended to they may be distinctly injured by school work.

SCOPE OF MEDICAL INSPECTION.

The medical inspection of schools embraces, or should embrace, (1) an inspection of the school plant with a view to making it hygienic; and (2) an inspection of those attending school for the detection of (a) communicable diseases or (b) non-communicable diseases or defects.

INSPECTION OF THE SCHOOL PLANT.

The school plant may be inspected preferably during vacation, or if necessary while school is in session. The inspector observes the site relative to its elevation and drainage. If there are nearby ponds where the malaria carrying mosquito may breed, he recommends its drainage. He inspects the school building to ascertain that it is suitable and adequate to the needs of the school district. The provision for its heating, ventilation, and lighting are inspected and those changes needed are called to the attention of the school committee. While in the building he examines the school desks with reference to the lines of their construction. He knows that spinal curvatures and other deformities are often caused by poorly constructed desks; how to place the windows so that studying will not injure the eyes; the method of heating which will keep the children comfortable; the kind of blackboards which will be easy on the eye; the sanitary method of cleaning the schoolroom and the place for the teacher's platform and desk. He will see that there is an adequate cloak room where wraps and hats may be hung, and a closet where lunch baskets may be safely put away. Of all these things he takes notice, and offers such suggestions for improvements as may be practical.

In addition to the things mentioned, there are two school necessities to which he pays especial attention. In the large towns they may be found within the walls of the buildings, but in villages and rural schools they are found or should be found on the school grounds. One is the drinking water supply, the second the water closet or surface privy.

The Drinking Water Supply.

If the drinking water is derived from a city supply which is regularly examined monthly by the State Laboratory of Hygiene, it would be regarded as safe providing the plumbing was modern. If, on the contrary, the supply comes, as is usually the case in villages and rural schools, from an open spring or well, there is great likelihood that it is polluted. In cases where pollution is suspected, samples of the water should be collected by the inspector, to be examined in the State Laboratory of Hygiene.

Knowing that diseases are often scattered by the use of common drinking cups or towels, he lectures to the children on these along with other points and urges the use only of individual towels or paper towels, and of individual cups if the sanitary drinking fountains are impracticable.

SNELLEN TEST SHEET, (See Direction pages 22 and 23.)

70 ft. or 21 m.

D L N

50 ft. or 15 m.

P T E R

40 ft. or 12 m.

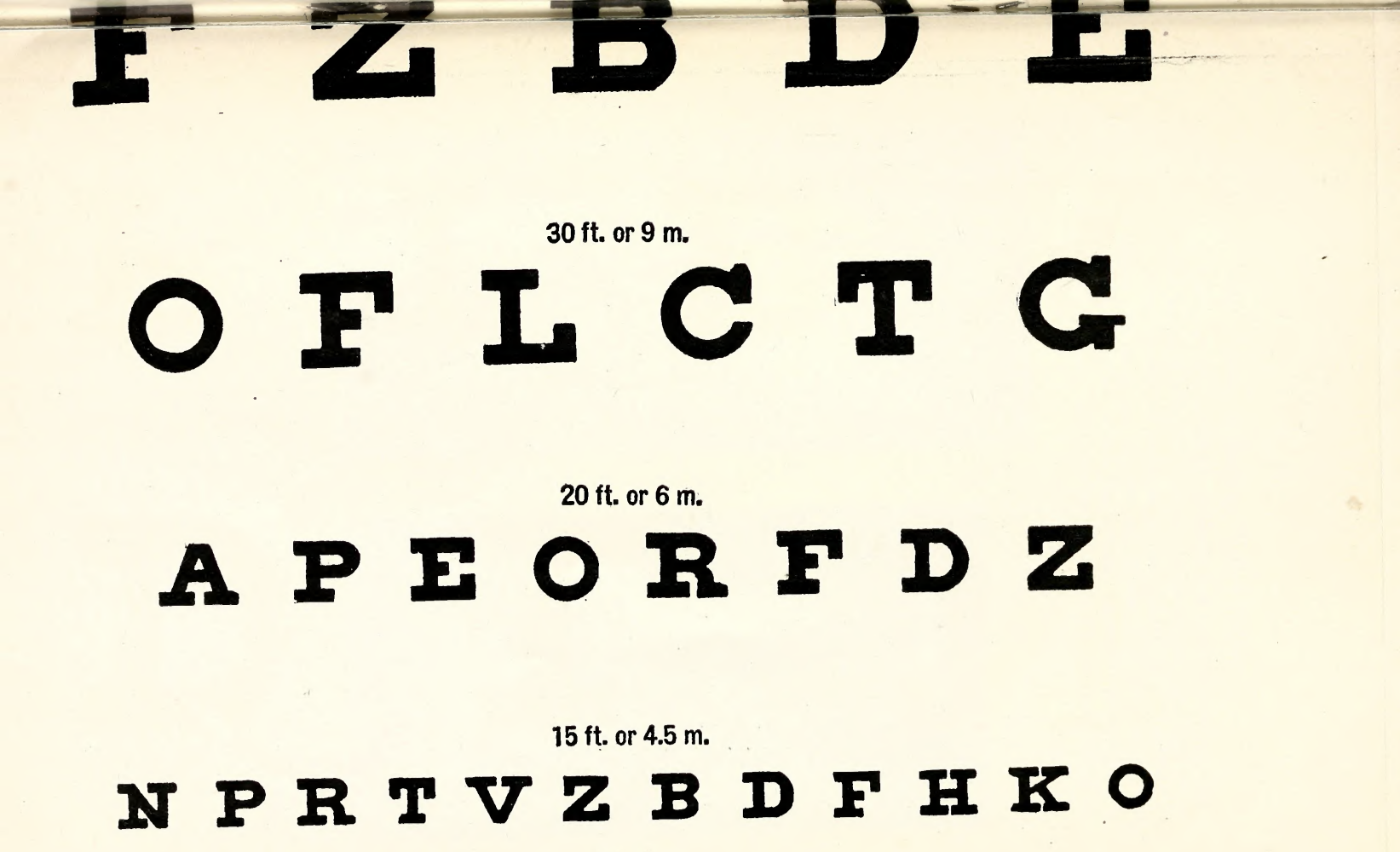
F Z B D E
30 ft. or 9 m.
O F L C T G
20 ft. or 6 m.
A P E O R F D Z
15 ft. or 4.5 m.
N P R T V Z B D F H K O

Fig. 3.

Water Closets or Sanitary Surface Privies.

Where school buildings are accessible to water and sewerage, water closets should be provided and kept in good condition. This affords the ideal method for disposing of the excreta. Nine-tenths of our schools have, however, no sewerage facilities. It is of the utmost importance that they be provided with the best substitute for water closets—the sanitary privy. The inspector should not rest until there are two such privies for each school.

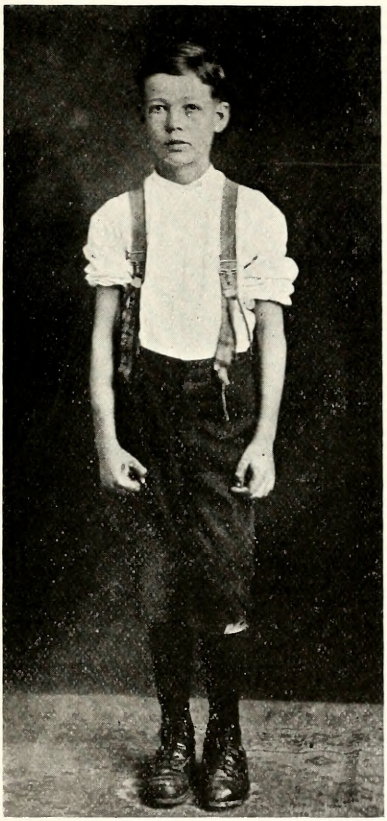

FIG. 4. A Pitt county boy the day he was treated at the county dispensary for hookworm disease.

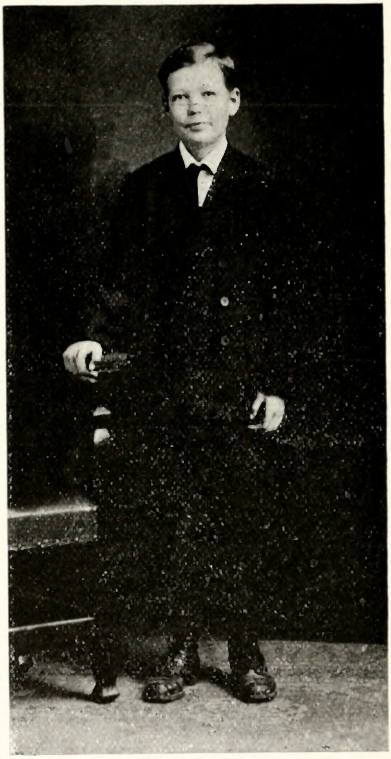

FIG. 5. The same boy after taking three or four treatments was completely cured. He gained in weight, regained his color; and was freed from suffering.

By a sanitary privy is meant one that affords comfort and privacy and at the same time prevents the spread through the excreta of certain filth-borne diseases, such as typhoid fever, hookworm disease, diarrhœa, dysentery, etc.

Its essentials are:

(1) A water-tight receptacle for receiving the excreta as it is discharged from the body.

(2) An arrangement which will protect the contents of the receptacle from contact with flies and other living creatures which might scatter disease germs.

(3) A means by which the excreta may be removed from the receptacle and rendered harmless by some method approved by sanitarians.

The writer has prepared a pamphlet on the plans, specifications, and bills of material for the building of sanitary privies and will send them free on request.

It is a shame that all too often no kind of privy is provided. The girls lay claim to the woods or bushes in one direction from the schoolhouse and the boys another. In many places a forward step has been taken and scraps of lumber have been used to close in a shanty which scarcely affords privacy and certainly is not sanitary.

FIG. 6. Selma Ellis, of Columbus county. Photograph made at county dispensary. Age 16, weight 62½ pounds; anemic ulcer on leg; ill 8 years. He was unable to go to school or work; in fact he was unable to sit or stand. Notice the change made in 7 weeks by a few cents worth of thymol.

This lack of privacy is so repugnant to young women and girls that they repeatedly postpone the call of nature and ultimately develop a condition which permanently impairs their health. Aside from this consideration, we know many people to be "carriers" of disease germs who are not suffering now and perhaps have not for months or years with any manifestation of sickness. Where their excreta is deposited on the ground, soil pollution results, and disease germs carried by flies, drinking water or otherwise find entrance into the bodies of the children. Where, then, there is a neglect to provide sanitary privies at schools, the school becomes a place for the exchange of disease rather than a place where means of preventing disease is taught and the teachings put into practice.

MEDICAL INSPECTION OF CHILDREN.

The inspection of those who attend school is made of course while school is in session. Where time permits, every child, teacher, and school employee should be examined by the medical inspector. This is practicable in cities, and is desirable also in rural schools, but on account of the intervening distances and small schools, it is not yet feasible.

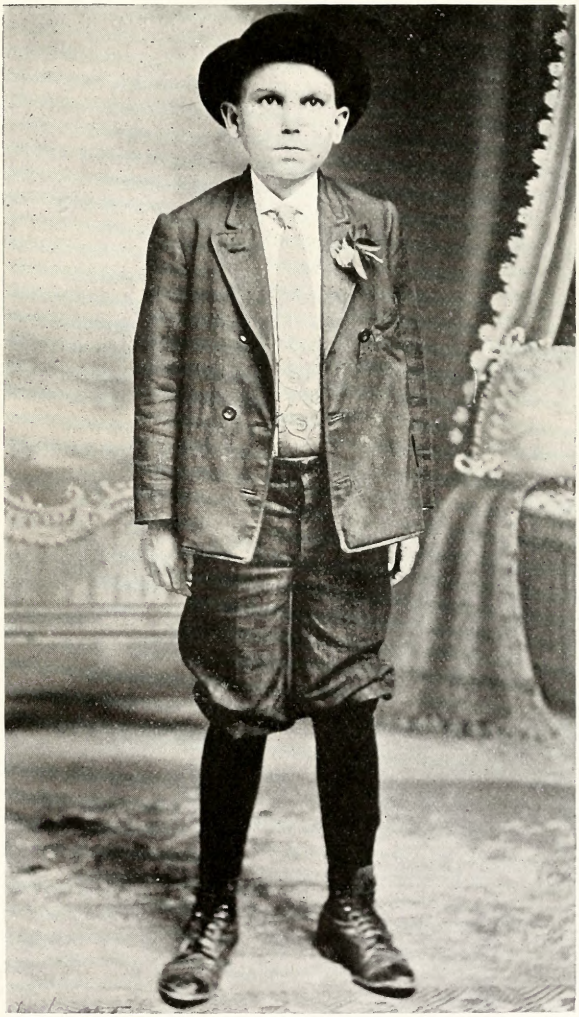

FIG. 7. Selma Ellis seven weeks later after taking the hookworm treatment. He was able to walk and run; weighed 79 pounds; and during the past winter he has been in school.

A method which is practical requires that the teacher be acquainted with the important points suggesting disease or defect. This information may be obtained from lectures at teachers' meetings by the inspector and from a

brief manual supplied by him. All those children who to the teacher seem backward, diseased or defective, are listed by the teacher. These are carefully examined by the medical inspector on his visit to the school. When he finds disease or defect he makes a record of the case, and the case is disposed of as the occasion demands. A communicable disease requires the exclusion of the child; a non-communicable disease or a defect is recorded, and the parent notified and urged to give the child the needed medical attention.

Some method of keeping track of each child is used so that infectious diseases may not spread; and in order to know what children have received medical attention. To compare the progress before and after the correction of defects furnishes a very interesting study, one that leaves no room to question the expediency of having medical inspection.

Each one of us can recall instances in which a failure to invest in a capable *health protector* proved very expensive to a county, costing much sickness and perhaps human life, not to mention other expenses. The epidemic gained such headway that the schools were closed, hundreds of dollars were spent in quarantines established too late, and children were robbed of school advantages. All this happened because there was no whole-time capable health officer who with the intelligent coöperation of the teachers could take charge of the situation at the proper moment and prevent the epidemic.

Communicable Diseases.

The following is a list of those diseases to which special attention is given by the medical inspector, and with which the teacher should have a thorough acquaintance:

Diphtheria.
Scarlet fever.
Measles.
Smallpox.
Chicken pox.
Whooping cough.
Influenza (grippe).
Mumps.
Eye diseases.
Trachoma.
Pink eyes.
Ring worm.
Scabies (itch).
Pediculosis (lice).
Impetigo contagiosa.
Typhoid fever.
Hookworm disease.
Malaria.
Tuberculosis.

Non-communicable Diseases or Defects.

Whether or not any of the communicable diseases make their appearance to demand the time of the inspector, there will always be found children suffering from some remediable affection which renders them backward. Among these may be named:

Anemia (impoverished blood).
Enlarged glands.
Nervous diseases.
Heart disease.
Lung disease.
Feeble mindedness.
Skin disease.
Bone deformity.
Defect of vision.
Defect of hearing.
Defect of breathing.
Defective teeth.
Enlarged tonsils.
Adenoids.

FIG. 8. Group of children at one of Guilford County's graded schools, suffering with large adenoids and tonsils. Their adenoid faces suggests nasal obstruction. General condition below normal, round stooped shoulders, frequent colds, snorers and poor sleepers at night. (Courtesy Dr. W. Perry Reaves.)

FIG. 9. Same as Fig. 3. Three to five months after adenoids and tonsils were removed, teaches the lesson, "shut your mouth to save your life." All gained in weight. Girl No. 4 gained fifteen pounds in three months. (Courtesy Dr. W. Perry Reaves.)

History of Treatment of the Groups Seen on Opposite Page

(Supplied by Dr. W. Perry Reaves.)

No. 1.—History: Male, age 8; second year in school, in lower first grade.

Symptoms: Has sniffles, colds, and stammers, mouth breather, general condition poor.

Diagnosis: Large tonsils and adenoids.

Treatment: December 27, 1910, removed tonsils and adenoids. May school report five months later, advanced more in five months than in one year and a half before. Now compare his physical condition, which has improved equally as much.

No. 2.—History: Male, age 11; fifth year in school, fifth grade; hearing not good, inattentive, mouth breather.

Diagnosis: Large tonsils and adenoids, catarrh of eustachian tubes, poor ventilation of middle ear, causing retracted drum. Right ear could hear watch ten inches; left ear could hear watch fifteen inches.

Treatment: December 27, 1910, removed tonsils and adenoids. May 23, 1911: Right ear, watch nine feet; left ear, watch twelve feet.

Hearing improved about one thousand per cent; general condition changed from hook-worm type to a rosy cheeked lad; gained ten pounds in weight. School report before operation, was hard for him to make his grades; after operation, was never again sent to office for failure to do his work. How came this great change? Relieved congestion at the base of the brain by nasal breathing. The catarrh of the tube cleared up, ventilating the middle ear, and the hearing returned to normal; plenty of oxygen to the lungs and tissues caused the increase in weight, physical and mental ability.

No. 3.—History: Female, age 7 years; first year in school, lower first grade.

Symptoms: Head colds.

Diagnosis: Large tonsils and adenoids.

Treatment: Removed tonsils and adenoids. Five months later, promoted to second grade, better attendance, health improved.

No. 4.—History: Female, age 10; third year in school, second grade.

Symptoms: Ear aches, mouth breather.

Diagnosis: A V-shaped arch of hard palate, adenoids (adenoid facies).

Treatment: Removed adenoids. Five months later, school report, promoted to third grade. Before operation, reports poor. After operation, good and excellent. Seems much stronger physically.

No. 5.—History: Female, age 8 years; third year in school, first grade; hearing not good; inattentive.

Diagnosis: Tonsils and adenoids. V-shaped arch (no adenoid facies).

Treatment: Removed tonsils and adenoids. Five months later, school report: Promoted to second grade; work much better; still inattentive because of habit acquired.—"The inattentiveness is not from habit but because the hearing was so impaired that it did not return to normal." (Dr. Reaves.)

Right ear for watch, before operation, 24 inches; right ear for watch, after operation, 48 inches; left ear for watch, before operation, 20 inches; left ear for watch, after operation, 40 inches.

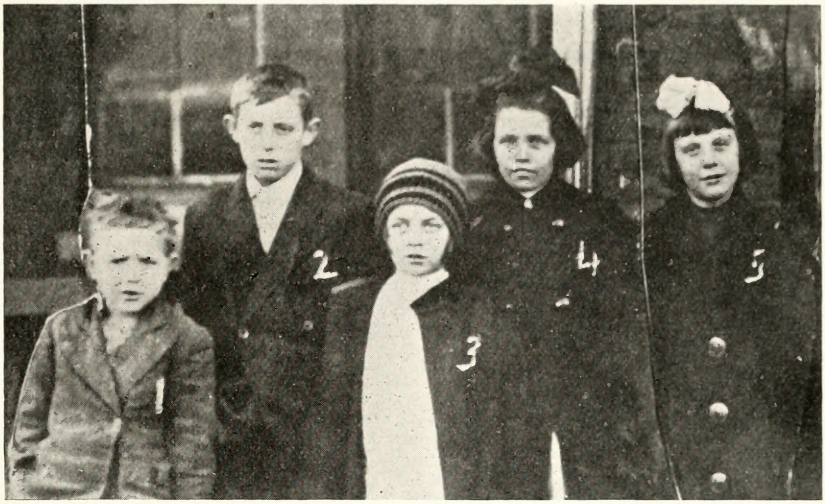

FIG. 10. Group of children at the Training School of the State Normal and Industrial College, Greensboro, N. C. Referred by their teachers to Professor J. A. Matheson, Head of Department of Pedagogy, as backward and defective children. Inspected and treated by Dr. W. Perry Reaves. Their school records were compiled by Professor Matheson from the teachers' records in December, 1910, and May, 1911. They were operated on the last week in December, 1910. (Courtesy Dr. W. Perry Reaves.)

FIG. 11. Same as Fig. 10, five months later after removal of adenoids and tonsils. Improvement in hearing and work, equaled or excelled the physical improvement. (Courtesy Dr. W. Perry Reaves.)

Suggestions to Teachers and Medical Inspectors for Their Aid in Identifying Diseases or Defects.

DIPHTHERIA.—Nasal diphtheria of a mild type without constitutional disturbance is one of the most important factors in causing the spread of the disease. A thin watery nasal discharge which irritates the nostrils and the upper lip should always be regarded with suspicion. Any hoarseness or thickness of the voice should cause an examination of the throat. If the tonsils are enlarged, if the mucous membrane is congested, if there is swelling of the palate, a culture should be made. These symptoms precede diphtheria.

SCARLET FEVER.—A sudden attack of vomiting, redness of the throat, headache, and a rise of temperature would warrant the isolation of the child. Any peeling of the skin should be regarded with suspicion. If there are any breaks in the finger tips, if on pressing the pulp of the finger tips there is a white line at the juncture of the nail with the pulp of the finger, particularly if this occurs on the majority of the finger tips, the child should be excluded from school.

MEASLES.—Running from the nose and slight intolerance of light may call for the examination of the mucous membrane of the mouth for Koplik's sign. Koplik's sign, so called, is the presence on the lining membrane of the mouth near the molar teeth of minute pearly white blisters without any inflammation around them. There may be only two or three of these blisters and they may escape detection if the patient is not carefully examined in a good light. These blisters are certain forerunners of an attack of measles.

MUMPS.—Any swelling or tenderness of the glands situated behind the angle of the jaw should be looked upon with suspicion. A very frequent symptom is swelling inside the mouth opposite the second upper molar tooth.

WHOOPING COUGH.—A persistent paroxysmal cough frequently accompanied by vomiting, no matter whether there is a distinct whoop or not, is indicative of whooping cough.

CHICKEN POX.—A few black crusts scattered over the body are evidences of an attack of chicken pox.

SCABIES (ITCH).—Small pimples caused by an animal parasite which burrows in the skin. The pimples may be noticed on the backs of hands, especially the spaces between the fingers, on arms or the whole body; seldom seen on the scalp or face. Itching and scratching are pronounced and are more intense when patient stands near a hot fire or about the time of disrobing at night.

PEDICULOSIS (LICE).—The irritation caused by vermin leads to scratching, which in time causes an inflammation of the skin of the neck and scalp. The condition is most easily detected by looking for the eggs (nits), which are always stuck onto the hair and are not readily brushed off.

RINGWORM.—All ringed eruptions upon the skin should be examined for ringworm, a vegetable parasitic skin disease.

IMPETIGO.—A disease characterized by large or small flat or elevated pustules or festers upon the skin. They usually appear on the face, neck or hand, and occasionally on the scalp. The disease is contagious and is often spread by towels and things handled.

Bone Disease.—Spinal curvature should be suspected when one shoulder is habitually raised or dropped, or when the child leans to the side or shows persistent round shoulders. Complaints of persistent "growing pains" or "rheumatism" may be the earliest signs of serious disease of the joints.

The Eyes.—The teacher should call to the attention of the medical inspector any child having redness of the eyes with sensitiveness to light, discharges from the lids, or a crusted condition about the eye lashes.

"Vision tests should be made for all those children who habitually hold the head too near the book (less than twelve to fourteen inches); those who frequently complain of headaches, especially in the latter portion of school hours; and those in whom one eye deviates even temporarily from the normal position. Habitual scowling and wrinkling of the forehead when reading or writing; twitching of the face; inattention and slowness in book studies in a child otherwise bright, are symptoms indicative of trouble with the eyes, and should call for their testing. (See method for testing, page 22.)

Ears.—"All cases where there is running from the ears, or if there are crusted patches on them, should be reported. Children who are slightly hard of hearing, sit with their mouth partially open, which gives them a somewhat dull expression. They hear questions imperfectly, hence are slow and often stupid in their answers, since they try to conceal the hardness of hearing." The hearing test should be applied to such children. (See method, page 23.)

Nose.—If there is a discharge from only one nostril, a foreign body in the nose should be looked for.

Adenoids.—In cases of chronic nasal obstruction, as evidenced by mouth breathing, snoring, continual post-nasal catarrh or recurring ear trouble, the presence of adenoid growth (third tonsil) should be suspected and the child referred to a specialist for examination and treatment.

Enlarged Tonsils.—With recurring attacks of tonsilitis, enlargement of glands in the neck and deafness, suggest the need of having the tonsils examined by the family physician as to the propriety of removing the tonsils.

Teeth.—"Cavities in the teeth are centers of infection, causing unclean mouths which promote the growth of disease germs. Pus from diseased teeth seriously interferes with digestion and poisons the system. It causes a lowering of vitality and renders mental effort difficult." Children should be taught to care for the teeth. Inspection of the teeth by a dentist should be made at least once in six months.

OTHER GENERAL SYMPTOMS AND WHAT THEY MAY DENOTE.

Emaciation (Loss of Flesh).—This is a manifestation of many chronic diseases and may point especially to tuberculosis or hookworm disease. By applying to the writer or to the State Laboratory of Hygiene the teacher can have a free test for hookworm disease made.

Pallor.—Pallor usually indicates poverty of the blood. Girls about the age of puberty often show it. Associated with puffiness of the face it may indicate kidney disease or hookworm disease. It is seen in chronic malarial cases.

Shortness of Breath, if not associated with anemia, suggests heart disease. Associated with coughing, it may point to lung trouble.

Swellings of the Neck, where acute and not associated with mumps, suggests some throat affection. If chronic they suggest tuberculosis.

Flushing of the Face, if not caused by violent exercise, suggests fever, and should be reported.

Any Kind of Eruption, especially if accompanied by a rise of temperature, should be reported immediately to the physician and the child sent home until allowed to return by the medical inspector's ruling.

Frequent Requests to Go Out may indicate trouble of some sort with the bowels, kidneys, or bladder.

Nervous Spasms or Convulsions should be referred to the medical inspector. Feeble-minded children should be sent to the State school provided for this class of unfortunate children.

Methods for Testing the Eyesight and Hearing, for Use by Teachers.

The directions prepared by the Massachusetts State Board of Health and made a part of the laws of that State are simple, clear, and concise. They are as follows:

TO TEST THE EYESIGHT.

Hang the Snellen test letters (see Fig. 3) in a good, clear light (side light preferred), on a level with the head. Place the child twenty feet from the letters, one eye being covered with a card held firmly against the nose, without pressing on the covered eye, and have him read aloud, from left to right, the smallest letters he can see on the card. Make a record of the result. Children who have not learned their letters, obviously, can not be given this eyesight test until after they have learned them.

TO RECORD THE ACUTENESS OF EYESIGHT.

There is a number over each line of test letters, which shows the distance in feet at which these letters should be read by a normal eye. From top to bottom, the lines on the card are numbered respectively 50, 40, 30, and 20. At a distance of 20 feet the average normal eye should read the letters on the 20-foot line, and if this is done correctly, or with a mistake of one or two letters, the vision may be noted as 20/20, or normal. In this fraction the numerator is the distance in feet at which the letters are read, and the denominator is the number over the smallest line of letters read. If the smallest letters which can be read are on the 30-foot line, the vision will be noted as 20/30; if the letters on the 40-foot line are the smallest that can be read, the record will be 20/40; if the letters on the 50-foot line are the smallest that can be read, the record will be 20/50.

If the child can not see the largest letters, the 50-foot line, have him approach slowly until a distance is found where they can be seen. If five feet is the greatest distance at which they can be read, the record will be 5/50 (1/10 of normal).

Test the second eye, the first being covered with the card, and note the result, as before. With the second eye have the child read the letters from

right to left, to avoid memorizing. To prevent reading from memory, a hole 1½ inches square may be cut in a piece of cardboard, which may be held against the test letters, so as to show only one letter at a time, and may be moved about so as to show the letters in irregular order. A mistake of two letters on the 20 or the 30-foot lines, and of one letter on the 40 or 50-foot lines, may be allowed.

Whenever it is found that the child has less than normal sight, 20/20 in either eye, that the eyes or eyelids are habitually red and inflamed, or that there is a complaint of pain in the eyes or head after reading, the teacher will send a notice to the parent or guardian of the child, as required by law, that the child's eyes need medical attention.

METHOD OF TESTING HEARING.

If it is possible, one person should make the examinations for an entire school, in order to insure an even method. The person selected should be one possessed of normal hearing, and preferably one who is acquainted with all the children, the announcement of an examination often tending to inspire fear.

The examinations should be conducted in a room not less than 25 or 30 feet long, and situated in as quiet a place as possible. The floor should be marked off with parallel lines one foot apart. The child should sit in a revolving chair on the first space.

The examination should be made with the whispered or spoken voice; the child should repeat what he hears, and the distance at which words can be heard distinctly should be noted.

The examiner should attempt to form standards by testing persons of normal hearing at normal distances. In a still room the standard whisper can be heard easily at 25 feet, the whisper of a low voice can be heard from 35 to 45 feet, and of a loud voice from 45 to 60 feet.

The two ears should be tested separately.

The test words should consist of numbers, 1 to 100, and short sentences. It is best that but one pupil at a time be allowed in the room, to avoid imitation.

For the purpose of acquiring more definite information concerning the acuteness of hearing, one may have recourse to the 512 v. s. (vibrations per second) tuning fork and the Politzer acoumeter.

For very young children a fair idea of the hearing may be obtained by picking out the backward or inattentive pupils, and those that seem to watch the teacher's lips, placing them with their backs to the examiner, and asking them to perform some unusual movement of the hand, or other act.

The results of the examinations are recorded by the room teacher on double sheets, having spaces for recording the results of the examination.

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